

AMENDMENT TO THE SPECIFICATION

Please replace the following identified paragraphs of the application with the amended paragraphs given below:

Page 6, beginning on line 17:

~~3. OBJECTS AND ADVANTAGES~~

~~There has been summarized above, rather broadly, the prior art that is related to the present invention in order that the context of the present invention may be better understood and appreciated. In this regard, it is instructive to also consider the objects and advantages of the present invention.~~

~~It is an object of the present invention to provide an assortment of individual spray heads with no moving parts and with relatively few orifices that uniformly cover a relatively large surface area with liquid droplets that have average diameters, velocities and possibly pulsating frequencies that meet a user's prescribed specifications.~~

~~It is an object of the present invention to provide a spray head with no moving parts and with relatively few orifices to uniformly cover a relatively large surface area (e.g., a 400 cm² area at a distance of 30 cm from the spray head's exit) with liquid droplets that have large diameters (e.g., > 2 mm), high velocities (e.g., > or ~ 4 m/sec) and possibly pulsating frequencies that are in the range of perception by the human body (e.g., < or ~ 30-60 hertz).~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices that are ideally designed for shower head and body spray applications.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices that operate at low flow rates in shower head and body spray applications so as to yield significant water savings.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices that are ideally designed for an assortment of commercial cleaning applications.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices for bathing applications that can allow for reduced flow rates, while~~

~~still yielding sprays that provide the same tactile sensations as they impact upon the skin of a user.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices for bathing applications that can allow for reduced energy consumption, while still yielding sprays that provide the same tactile sensations as they impact upon the skin of a user.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices for bathing applications that can make “less water” feel like “more water” (i.e., providing low flow rate sprays that provide the same tactile sensations as they impact upon the skin of a user).~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices that prove to be ideally suited for shower massaging applications.~~

~~It is an object of the present invention to provide spray heads with no moving parts and with relatively few orifices that prove to be ideally suited for shower non-massaging applications.~~

~~—These and other objects and advantages of the present invention will become readily apparent as the invention is better understood by reference to the accompanying summary, drawings and the detailed description that follows.~~

Page 9, beginning on Line 1:

~~In another preferred embodiment, the present invention takes the form of a method for forming a fluid spray whose droplets cover a specified surface area having a prescribed width and height, with this area located at a prescribed distance in front of the spray head which emits the spray. This method includes the steps of: (a) stacking a plurality of fluidic oscillators one on top of the other, each of these oscillators having a prescribed fan angle in its front surface from which fluid is emitted from the oscillator, (b) configuring the oscillators in this stack such that the flow of fluid from adjoining oscillators have a specified angle of divergence between the centerlines of the planes defined by the flows from the outlets of the adjoining oscillators, (c) selecting the fan angles of the oscillators so as to yield the prescribed spray width, and (d) selecting the specified angle of divergence and the number of fluidic oscillators in the stack so as to yield the prescribed spray height.—~~

~~In another preferred embodiment, the present invention takes the form of a method for providing a fluid spray at a flow rate in the range of approximately 1.2—1.9 gpm that yields massaging, tactile sensations, as the droplets of said spray impact upon the skin of one in the line of flight of said spray, which are comparable to those produced by non-fluidic generated sprays operating in the higher flow rate range of approximately 2.0—2.5 gpm. This method includes the steps of: (a) stacking a plurality of fluidic oscillators one on top of the other, each of these oscillators emitting an effective string of fluid droplets that are swept from side to side at a prescribed frequency, (b) configuring the oscillators in this stack such that the flow of fluid from adjoining oscillators have a specified angle of divergence between the centerlines of the planes defined by the flows from the outlets of the adjoining oscillators, and (c) selecting the prescribed frequencies of the oscillators to be in the range between 10 cps and 60 cps.~~

Page 11, beginning on line 21:

~~FIG. 21 shows a perspective view and gives the operating characteristics of the fluidic oscillator disclosed in a PATENT PENDING patent application of the assignee.~~

FIG. 21 ~~22~~ shows a perspective view and gives the operating characteristics of the fluidic oscillator disclosed in USPN 6,253,782.

FIG. 22 ~~23~~ shows a perspective view and gives the operating characteristics of the fluidic oscillator disclosed in USPN 6,253,782.

FIG. 23 ~~24~~ shows a perspective view and gives the operating characteristics of the fluidic oscillator disclosed in USPN 3,563,462.

~~FIG. 25 shows a perspective view and gives the operating characteristics of the fluidic oscillator disclosed in USPN PATENT PENDING patent application of the assignee.~~

~~FIG. 26 shows a perspective view and gives the operating characteristics of a currently under development fluidic oscillator.~~

~~FIG. 27 shows a perspective view and gives the operating characteristics of a currently under development fluidic oscillator.~~

FIGS. 24A-24B ~~28A—28B~~ illustrate the flow rate savings available for bathing applications when using an oscillating spray having a frequency > 30 hertz.

FIG. 25 ~~29~~ shows a perspective view of a preferred embodiment of the present invention.

Page 12, line 19:

DESCRIPTION OF THE PREFERRED EMBODIMENTS

Page 14, beginning on line 24:

To accommodate such especially designed stacks of fluidic oscillators in the housings that have become the conventional standard for spray head designs in the plumbing industry, it has been found that it is advantageous to fit such stacks of fluidic oscillators into a carrier assembly or secondary housing 42 which fits easily into any of the standard shapes for conventional spray heads. FIG. 15A demonstrates the placement of such a stack in an appropriately designed carrier assembly **42**. A stopper unit **44** is seen to be used to ensure a tight seal around the line where the rear surfaces of the individual fluidic oscillators meet the bottom of the cavity **46** in the carrier assembly **42**. A carrier assembly cover plate **43** is used to hold the fluidic oscillators **10** in place within the assembly.

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With a wide range of fluidic circuits from which to chose and with many of these offering quite different flow characteristics, it would appear that there exists an almost infinite number of especially designed spray droplet distributions that can be achieved by judiciously stacking currently available fluidic oscillators. To assist in guiding such development tasks, FIGS. 18-23 ~~27~~ disclose various, commercially available (Bowles Fluidics Corporation, Columbia, MD) fluidic circuits that are available for special spray head design needs.

Also shown on FIGS. 18-23 ~~27~~ is data regarding the size and operating characteristics of these oscillators. Additionally, it should be noted that the fluidic circuits revealed in FIGS. 19, 22 and 23 ~~21, 23, 24 and 27~~ provide flows having essentially two-dimensional flow patterns, while the fluidic circuits shown in FIGS. 16, 20, and 21 ~~22, 25 and 26~~ (note: this circuit yields a special type of swirling jet) provide flows having essentially three-dimensional flow patterns.

Page 17, beginning on line 12:

As previously mentioned, for bathing purposes, significant flow rate reductions and energy savings are possible using spray heads equipped with especially designed stacks of fluidic oscillators. The reasoning behind this statement is further clarified by FIGS. 24A-24B ~~28A-28B~~.

In FIG. ~~24A~~ 28A, a Y-connector is shown which splits a 2.5 gpm stream into two 1.25 gpm sprays or jets. Suppose that these two jet sprays simultaneously impinge the skin of a bather at points A and B so as to produce some feeling of their presence (e.g., pressure and temperature changes on the skin). Meanwhile, FIG. ~~24B~~ 28B shows a 1.25 gpm jet being swept to and fro by a fluidic oscillator.

Page 18, beginning on line 27:

Additionally, it can be noted that one can design a spray head such that it has both conventional capabilities and those available by using fluidic oscillators into single spray head. See FIG. ~~25~~ 29 where a spray head is shown that utilizes an array of fluidic oscillators in the center of the front surface of the spray head, with this array being surrounding by a ring 52 of orifices 54 that emit a conventional spray.